Scientific Areas of Integrated Review Groups (IRGs)

For a listing of the Scientific Review Officer and membership roster for each study section, click on the study section roster under the study section name within an IRG listed below or go to the study section index (study sections listed alphabetically) and click on the specified roster next to the name of the study section.

Biology of Development and Aging IRG [BDA]

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- Development-1 Study Section [DEV1]
- Development-2 Study Section [DEV2]
- Cellular Mechanisms in Aging and Development Study Section [CMAD]
- Aging Systems and Geriatrics Study Section [ASG]
- International and Cooperative Projects -1 [ICP1]
- BDA Small Business Activities [SBIR/STTR] Special Emphasis Panels [BDA Small Business SEPs]

Development-1 Study Section [DEV1]

[DEV1 Membership Roster] [DEV1 Meeting Rosters]

The Development-1 [DEV1] study section addresses developmental questions approached at the levels of genetics, cells, tissues, organs and the whole organism in diverse kingdoms. Emphasis is on gametogenesis, organogenesis, metamorphosis, and regeneration. Specific areas covered by DEV1 include:

- Embryonic stem cell differentiation into germ layers and organ systems, differentiation, including changes in gene expression and all processes leading to tissue formation and the adoption of specific cell fates.
- Events leading to formation of organs including heart, lung, limbs, brain and spinal cord, endodermal organs, gonads, and reproductive tract.
- Gametogenesis: stem cell niche in gametogenesis; germ cell/somatic cell interactions; imprinting; and meiosis in a developmental context.
- Metamorphosis in invertebrates or vertebrates, regeneration of body parts (organs, limbs, nervous system, etc.).
- Regulatory networks in development, particularly in the context of gametogenesis, organogenesis, metamorphosis, and regeneration.
- Signaling in development.
- Cellular processes in development, including regulation and mechanisms of apoptosis in development.

Study sections with most closely related areas of similar science listed in rank order:

Cellular, Molecular and Integrative Reproduction [CMIR]
Development-2 [DEV2]
Neurogenesis and Cell Fate [NCF]

Molecular Genetics B [MGB]
Cellular Signaling and Regulatory Systems [CSRS]

TOP

Development-2 Study Section [DEV2]

[DEV2 Membership Roster] [DEV2 Meeting Rosters]

The Development-2 [DEV2] study section reviews applications covering a wide range of topics in developmental biology using diverse animal models. Cell biological, biochemical, genetic, imaging and molecular approaches to developmental problems at the level of cells, tissues, organs and the whole organism are appropriate. Emphasis is on pattern formation, stem cell biology, evolution, birth defects, and early embryonic development. Specific Areas covered by DEV2:

- Stem cell biology: totipotency and cell commitment.
- Early embryonic development: establishment and maintenance of cell polarity in eggs and embryos; tracing of cell lineage; cell migration; gastrulation; epithelial-mesenchymal transformation.
- Pattern formation: the process of cells establishing and refining boundaries and cellular identities that lead to morphological and biochemical patterns; the analysis of signal transduction pathways and signal integration during development.
- Regulatory networks: whole genome approaches to profile and analyze regulatory networks in development particularly in the context of pattern formation, birth defects, early embryonic development.
- Evolution of development: comparative development to understand conserved developmental processes and how they evolved.
- Birth defects: mechanism-based analyses of birth defects.

Study sections with most closely related areas of similar science listed in rank order:

Neurogenesis and Cell Fate [NCF]
Skeletal Biology Development and Disease [SBDD]
Development-1 [DEV1]
Hematopoiesis [HP]
Molecular Genetics B [MGB]

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Cellular Mechanisms in Aging and Development Study Section [CMAD]

[CMAD Membership Roster] [CMAD Meeting Rosters]

The Cellular Mechanisms in Aging and Development [CMAD] Study Section reviews applications that address fundamental studies relating to the biological, molecular, genomic, biochemical, metabolic and physiological mechanisms that determine lifespan and longevity. Specific areas covered by CMAD include:

- Determinants of lifespan and longevity in model organisms: caloric restriction/dietary restriction; role of insulin/IGF signaling and receptors in determining longevity.
- Theories of aging: oxidative stress; mitochondrial dysfunction; DNA damage; protein misfolding; autophagy; proteosomal degradation; apoptosis; cellular senescence; replicative senescence/cancer; telomeres and telomerase in aging.
- Genetics and epigenetics of aging including genetic manipulation of aging phenotype.
- Aging syndromes: Werner Syndrome (WS), Hutchinson Gilford Progeria Syndrome (HGPS); dyskeratosis congenita; laminopathies; other progeroid syndromes of accelerated aging.
- Immunosenescence: changes in immune function with age; thymic involution; macrophage function; inflammation.
- Adult stem cells in the replacement/repair of aging/damaged tissue.
- Muscle aging: mechanisms of signaling and satellite cell proliferation in alleviating sarcopenia.

Study sections with most closely related areas of similar science listed in rank order:

Aging Systems and Geriatrics [ASG]
Skeletal Muscle Biology and Exercise Physiology [SMEP]
Cellular and Molecular Biology of Neurodegeneration [CMND]
Pathobiology of Kidney Disease [PBKD]
Development-1 [DEV1]

TOP

Aging Systems and Geriatrics Study Section [ASG]

[ASG Membership Roster] [ASG Meeting Rosters]

The Aging Systems and Geriatrics [ASG] study section reviews applications on studies of age-related conditions and diseases that transcend single organ systems or disciplines, and which may require integrated experimental or observational approaches. Specific areas covered by ASG include:

- Age-related changes in the regulation of complex physiological functions (e.g., motor performance, balance, glucose metabolism, immune defense, menopause, and interventions to ameliorate such age-related changes).
- Geriatric syndromes (multifactorial health conditions due to system impairments that increase vulnerability to challenges) including, but not limited to, falls, syncope, frailty, immobility, delirium, incontinence, polypharmacy, malnutrition, mood disorders, sarcopenia, chronic pain, loss of functional independence, and failure to thrive.
- Systemic impact of co-morbidities on health status and clinical outcomes in older adults.
- Multicomponent, pleiotropic (e.g., exercise, nutrition) and mechanism-driven intervention studies addressing geriatric syndromes or age-related diseases affecting multiple systems which are unique or highly prevalent in elderly people or aging animals (e.g., congestive heart failure, atrial fibrillation, hypertension, type 2 diabetes, osteoarthritis, osteoporosis).
- Development and validation of biomarkers of biological health and aging.
- Modeling of complex regulatory networks such as those affecting cardiovascular function, circadian rhythms, frailty and postural control, and their alteration with age.
- Regulation of life span and rates of aging changes in animal models and humans employing approaches such as caloric restriction, and studies of animal models of human populations especially resistant to aging.

Study sections with most closely related areas of similar science listed in rank order:

Skeletal Muscle Biology and Exercise Physiology [SMEP]
Clinical Neuroscience and Neurodegeneration [CNN]
Clinical and Integrative Cardiovascular Sciences [CICS]
Cellular Mechanisms in Aging and Development [CMAD]
Hypersensitivity, Autoimmune, and Immune-mediated Diseases [HAI]
Neurological Aging and Musculoskeletal Epidemiology [NAME]

TOP

International and Cooperative Projects -1 [ICP1]

[ICP1 Membership Roster] [ICP1 Meeting Rosters]

The International and Cooperative Projects -1 [ICP1] Study Section exclusively reviews applications for the Fogarty International Research Collaboration Award in Basic Biomedical Sciences and for the Fogarty International Center Global Research Initiative Program in Basic Biomedical Sciences.

- The Fogarty International Research Collaboration Award in Basic Biomedical Sciences facilitates collaborative research between NIH-funded investigators and investigators in developing countries. A full description of the Program Announcement may be found at: http://grants.nih.gov/grants/guide/pa-files/PAR-08-222.html
- The Global Research Initiative Program in Basic Biomedical Sciences supports foreign investigators from developing countries who have been trained in the U.S. or through specific U.S.-sponsored programs to conduct independent research in their home country or other developing countries. A full description of the Program Announcement may be found at: http://grants.nih.gov/grants/guide/pa-files/PAR-07-239.html

Study sections with most closely related areas of similar science listed in rank order:

Since the International and Cooperative Projects -1 study section is exclusively dedicated to reviewing the above special Fogarty International Center Programs, there is no shared interest or coverage in other CSR study sections.

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BDA Small Business Activities [SBIR/STTR] Special Emphasis Panels [BDA Small Business SEPs]

[SBIR/STTR Rosters]

The Biology of Development and Aging IRG (BDA) Small Business Activities Special Emphasis Panel will review SBIR and STTR applications in the areas of developmental biology and aging, using diverse animal and plant models or human studies, and employing approaches at a variety of levels from molecules to whole organisms. Proposals that concern geriatric studies may transcend the boundaries of single organs or systems (e.g., in co-morbidities), and may require integrated experimental, genetic or observational approaches.

Specific areas covered by the BDA SBIR/STTR include:

- Basic biology of stem cells: in vitro culture of blastocysts and embryos; animal (invertebrate and vertebrate) and human embryonic and adult stem cells: strategies for their culture and differentiation both in vitro and in vivo, studies on totipotency and cell commitment; stem cell culture in vitro, stem cell differentiation and de-differentiation; identification and characterization of lineage-specific markers for stem cells.
- Gamete and embryo cryopreservation methodologies.
- Novel strategies for animal cloning.
- Use of reverse genetic approaches for addressing developmental questions [e.g., RNA interference (RNAi), morpholinos, and other oligonucleotide technologies].
- Development of toxicological and teratological assays in model organisms (e.g., zebrafish, frog, mouse, Drosophila, C. elegans) for identification of birth defects.
- New models of development or aging: including transgenic, animal, cellular and plant models of development, birth defects, cell death, regeneration and repair, and aging/longevity.
- Methods for analysis of apoptosis and apoptotic signal imaging in relation to remodeling of organ systems during development and aging.
- Markers that may predict aging or cellular senescence; inhibitors of senescence.
- Novel devices and monitoring systems for geriatric patients (i.e., patients with age-related conditions involving multiple systems and/or multifactorial mechanisms).
- Interventions for age-dependent cognitive and physiological deficits in humans (such as menopause, frailty, infections) when studies of geriatric morbidities transcend single organ systems or disciplines and may require integrated experimental, genetic or observational approaches.

BDA Small Business Activities have the following shared interests outside the IRG:

In general, applications focused on early development or on aging of tissues, organs, or organisms may be assigned to BDA when the emphasis is on general topics in development or aging. When the emphasis is on late postnatal differentiation of a specific tissue or organ system, the organ- or tissue-related IRG is the assignment of choice. Applications focused on the basic biology of stem cells may be clustered in BDA.

- **Biobehavioral and Behavioral Processes IRG (BBBP):** Studies directed toward the treatment of geriatric psychiatric disorders, such as Alzheimer□s disease, and animal models of psychological disorders of aging, could be assigned to the BDA IRG or to the BBBP IRG, depending upon the level of analysis and the nature of the intervention. Applications focused on geriatric syndromes, particularly those that transcend single organ systems and involve multiple experimental approaches, could be assigned to BDA IRG. Health education or training directed to the health care provider, not the patient, may also be assigned to the BDA IRG. However, if the focus of the study is on altering the behavior of the individual, including science education for the non-professional, the application could be assigned to BBBP.

- **Bioengineering Sciences and Technology IRG (BST):** If applications concern the development of a new technology or approach (e.g., computational modeling), then assignment to the BST IRG may be appropriate. If use of an existing technology or approach is proposed to address questions in aging or development, or the basic biology of stem cells, then assignment to the BDA IRG may be appropriate.

- **Cell Biology IRG (CB):** Applications concerning technologies for analysis of cellular processes, including cell imaging and flow cytometry, may be appropriate for assignment to the CB IRG. Applications that propose use of cellular biological techniques to study a developmental or aging process may be appropriate for the BDA IRG. Applications concerning the basic biology of adult or embryonic stem cells (e.g., culturing, differentiation) may be reviewed in the BDA IRG.

- **Digestive Sciences IRG (DIG):** Applications concerning late development of tissues or organs in digestive systems could be assigned to the DIG IRG, whereas studies on early development or aging of the digestive tract tissues could be assigned to BDA IRG. Applications on the basic biology of adult or embryonic stem cells could be assigned to the BDA.

- **Endocrinology, Metabolism, Nutrition, and Reproductive Sciences IRG (EMNR):** Applications on pregnancy, reproduction or endocrinology may be assigned to EMNR, whereas applications focused on early development (e.g., gametogenesis) and its mechanisms could be assigned to BDA. Applications focused on effects of aging may be assigned to EMNR when the role of aging is secondary to the study of nutrition and metabolism; conversely, applications that have a primary focus on aging or lifespan may be assigned to BDA.

- **Genes, Genomes and Genetics IRG (GGG):** When applications involve technologies and methodologies for gene identification and analysis, studies on gene expression, and development of molecular genetic tools, assignment to the GGG IRG may be appropriate. If such applications propose use of genetic tools to address questions in development or aging/longevity, then assignment to the BDA IRG may be appropriate.

- **Health of the Population IRG (HOP) and the Risk Prevention and Health Behavior IRG (RPHB):** The HOP IRG and the RPHB IRG also study the aging process in humans. The HOP IRG focuses on the demographic and socioenvironmental factors that affect health and health related behavior, and the various ways in which these factors are taken into account when attempting to prevent or treat health conditions. The RPHB IRG focuses on the psychosocial aspects of the aging process. Studies of behavioral modification, including health education or training, directed toward the prevention and treatment of geriatric diseases, including psychological aspects, could be assigned to the HOP IRG or the RPHB IRG, depending on the level of analysis, the nature of the intervention and whether the focus is on the patient or the health service provider. Studies in aging humans or animals which transcend single organ systems or disciplines and which involve integrated experimental, genetic or observational approaches (such as in geriatric co-morbidities) could be assigned to the BDA IRG.

- **Hematology IRG (HEME):** Applications focused on hematopoietic stem cells or related therapies could be assigned to the HEME IRG. Applications on the basic biology of adult or embryonic stem cells could be assigned to the BDA IRG.

- **Molecular, Cellular and Developmental Neurosciences (MDCN) IRG:** Applications on the study of stem cells in the nervous system could be assigned to MDCN, whereas studies involving general topics in development and aging (when the focus is aging, particularly those that transcend single organ systems or disciplines) in relation to the nervous system could be assigned to BDA.

- **Musculoskeletal, Oral and Skin Sciences IRG (MOSS):** Applications focused on musculoskeletal, oral and/or skin tissues could be assigned to the MOSS IRG, whereas studies involving broad topics in early development or aging of these tissues could be assigned to BDA IRG. Applications on the basic biology of adult or embryonic stem cells could be assigned to the BDA.

- **Renal and Urological Sciences IRG (RUS):** Applications that concern renal or genitourinary tract tissues could be assigned to RUS IRG, whereas early developmental studies or studies on aging of these tissues could be assigned to BDA. Applications on the basic biology of adult or embryonic stem cells may be reviewed in BDA.

- **Respiratory Sciences IRG (RES):** Applications that are focused on the respiratory system and related disorders could be assigned to the RES IRG. Studies focused on early development of the respiratory system or aging of these tissues could be assigned to the BDA IRG. Applications on the basic biology of adult or embryonic stem cells could be assigned to BDA.

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Last updated: November 19, 2008

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